# Missouri Spring Rise – Master Manual Spring-Rise Alternative

**Hydrology/Water Quality Technical Group** 

Missouri River Plenary Meeting

July 26, 2005



#### a. Number of Rises

One/Two depending on storage conditions

- No Spring Rise below 31.0 MAF storage on March 15
- A single rise between 31.0 and 54.5
  MAF
- Two rises above 54.5 MAF



#### **b. Flood Control Targets/Constraints**

Flood control constraints no increased – Only if necessary can be adjusted minimally during the spring rise period



#### c. First Rise

### i. Timing

Coincide first rise with the start of navigation support releases from Gavins Point



#### c. First Rise

#### ii. Duration and rise and fall rates

- Rise at a rate of 3,000 cfs/day
- 1 day peak
- Fall at a rate of 1,500 cfs/day



#### c. First Rise

### iii. Magnitude

6,000 cfs above service levels



#### d. Flows between rises

**Use Master Manual curves** 



#### e. Second Rise

 No rise when system storage is below 31.0 MAF



- i. Timing
  - Start June 1<sup>st</sup>



#### e. Second Rise

#### ii. Duration and rise and fall rates

- Rise at a rate of 3,000 cfs/day
- 1 day peak
- Fall at a rate of 1,500 cfs/day



#### e. Second Rise

#### iii. Magnitude

6,000 cfs above service levels



# f. How to address water availability and variation for wet, normal, and dry years

- Use March 15<sup>th</sup> storage check to set number of peaks and their magnitudes.
- Based on navigation support and drought conservation in the Current Water Control Master Manual.



Uses an additional 0.08 MAF compared to Current Water Control Plan



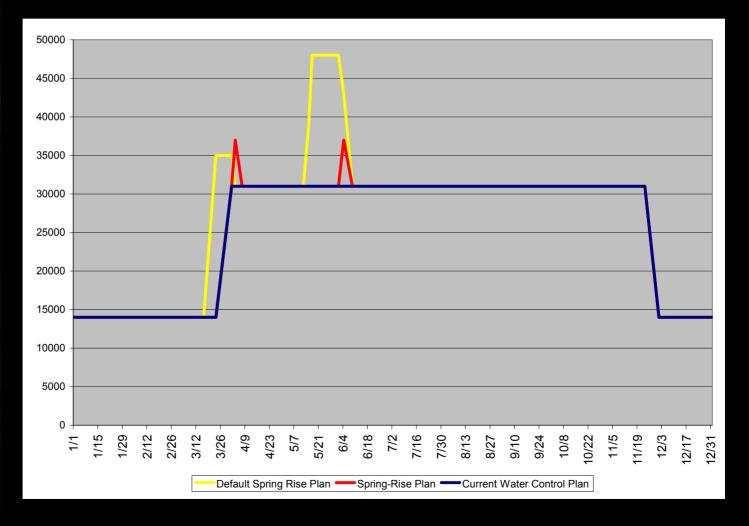


### h. Proposal Flexibility

- The Corps should be able to react to unexpected events during the spring rise period
- The Corps can use tributary flows to reach service levels
- The Corps can increase discharges to evacuate water
- The Corps can modify releases to reduce potential for flooding

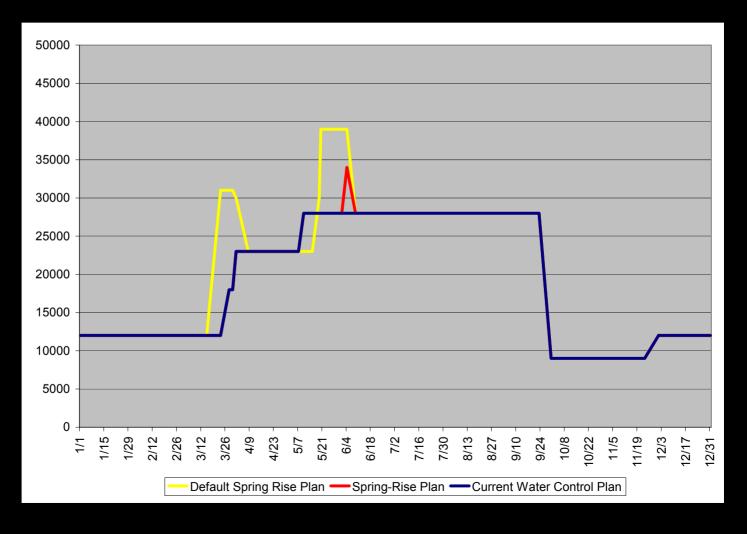
## Release Hydrograph

#### Normal System Storage - Bimodal Rise



## Release Hydrograph

#### **Low System Storage - Single Rise**



**Questions?**